

What is claimed is:

1. A method for regenerating a maize plant from a maize cell comprising:

(a) incubating meristematic cells from the plant in a meristem proliferation medium for a sufficient time to induce proliferation of the cells

5 (b) isolating the proliferating cells

(c) and growing the isolated cells under conditions such that a plant is regenerated

wherein the meristem proliferation medium comprises from 0 mg/L to about 3 mg/L of an auxin, from about 2 mg/L to about 8 mg/L of a cytokinin, from about  
10 10 g/L to about 60 g/L of a sugar/carbon source; from about 0.1  $\mu$ M to about 50  $\mu$ M copper; and from about 30  $\mu$ M to about 1500  $\mu$ M zinc.

2. The method of claim 1, wherein the zinc concentration is from about 100  $\mu$ M to about 500  $\mu$ M.

3. The method of claim 1, wherein the sugar/carbon source is maltose.

15 4. The method of claim 1, wherein the sugar/carbon source is sucrose.

5. The method of claim 1, wherein the maize plant is selected from the group consisting of B73, Ohio 43, Missouri 17, PHJ90, PHR81, PHP02, PHN46, and PHP38, PHTE4 and PHJ90.

6. The method of claim 1 where the maize plant is B73.

20 7. The method of claim 1, wherein the meristem proliferation medium comprises at least one cytokinin, copper at a concentration of from 0.1  $\mu$ M to about 50  $\mu$ M, zinc at a concentration of from about 30  $\mu$ M to about 1500  $\mu$ M, and no auxin.

8. A medium for inducing shoot meristem cultures in plants comprising from 0 mg/L to about 3 mg/L of an auxin, from about 2 mg/L to about 8 mg/L of a cytokinin, from about 10 g/L to about 60 g/L of a sugar/carbon source; from about 0.1  $\mu$ M to about 50  $\mu$ M copper; from about 30  $\mu$ M to about 1500  $\mu$ M zinc,  
5 and a shoot meristem culture.
9. The medium of claim 8 wherein the zinc concentration is from about 100  $\mu$ M to about 500  $\mu$ M.
10. The medium of claim 8 wherein the sugar/carbon source is maltose.
11. The medium of claim 8 wherein the sugar/carbon source is sucrose.
- 10 12. The medium of claim 8 wherein the shoot meristem culture is maize.
13. The medium of claim 12 wherein the shoot meristem culture is selected from the group consisting of B73, Ohio 43, Missouri 17, PHJ90, PHR81, PHP02, PHN46, and PHP38, PHTe4 and PHJ90.
14. The medium of claim 13 wherein the shoot meristem culture is B73
- 15 15. A method for producing a transformed maize plant comprising;
- (a) inducing a shoot meristem culture by culturing on a meristem proliferation medium an isolated maize tissue selected from the group consisting of vegetative shoot meristem tissue, meristem tissue from axillary shoot, stem tissue, or leaf base tissue;
- 20 (b) introducing a nucleic acid into at least one cell of the shoot meristem culture;
- (c) selecting the transformed cells; and
- (d) and growing the transformed cells in a regeneration medium so as to produce a transformed plant,

wherein the meristem proliferation medium comprises from 0 mg/L to about 3 mg/L of an auxin, from about 2 mg/L to about 8 mg/L of a cytokinin, from about 10 g/L to about 60 g/L of maltose or about 10 g/L to about 60 g/L of sucrose; from about 0.1  $\mu$ M to about 50  $\mu$ M copper; and from about 30  $\mu$ M to about 1500  $\mu$ M zinc.

16. The method of claim 15 where the maize is selected from the group consisting of B73, Ohio 43, Missouri 17, PHJ90, PHR81, PHP02, PHN46, and PHP38, PHTE4 and PHJ90.

17. The medium of claim 15 wherein the zinc concentration is from about 100  $\mu$ M to about 500  $\mu$ M.

18. The method of claim 15 where the maize is B73.

19. The method of claim 15 wherein the shoot meristematic culture is maintained on MPM-Cu.

20. A method for producing a transformed maize plant comprising;

(a) inducing a shoot meristem culture by culturing on a meristem proliferation medium an isolated maize stem tissue;

(b) introducing a nucleic acid into at least one cell of the shoot meristem culture;

(c) selecting the transformed cells; and

(d) and growing the transformed cells in a regeneration medium so as to produce a transformed plant.

21. A method for producing a shoot meristem culture from stem tissue of a maize plant comprising isolating vegetative shoot tissue from a germinated

seedling and culturing the shoot tissue on a meristem proliferation medium so as to induce a shoot meristem culture,

wherein the meristem proliferation medium comprises from 0 mg/L to about 3 mg/L of an auxin, from about 2 mg/L to about 8 mg/L of a cytokinin, from about 5 10 g/L to about 60 g/L of maltose or about 10 g/L to about 60 g/L of sucrose; from about 0.1  $\mu$ M to about 50  $\mu$ M copper; and from about 30  $\mu$ M to about 1500  $\mu$ M zinc.